

STERGIS WINDOWS AND DOORS, INC. ACOUSTICAL PERFORMANCE TEST REPORT

SCOPE OF WORK

ASTM E90 SOUND TRANSMISSION LOSS TESTING ON A
WINDGATE, DOUBLE HUNG WINDOW

REPORT NUMBER

I2143.01-113-11-R0

TEST DATES

04/11/18; 04/23/18

ISSUE DATE

05/11/18

RECORD RETENTION END DATE

04/23/22

PAGES

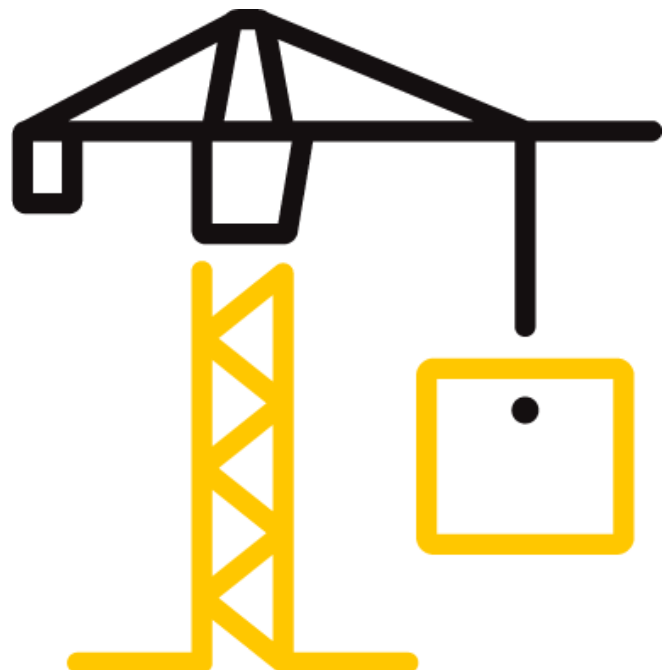
18

DOCUMENT CONTROL NUMBER

ATI 00596 (07/24/17)

RT-R-AMER-Test-2761

© 2017 INTERTEK



TEST REPORT FOR STERGIS WINDOWS AND DOORS, INC.

Report No.: I2143.01-113-11-R0

Date: 05/11/18

REPORT ISSUED TO STERGIS WINDOWS AND DOORS, INC.

79 Walton Street
Attleboro, Massachusetts 02703

SECTION 1 SCOPE

Intertek Building & Construction (B&C) was contracted by Stergis Windows and Doors, Inc. to conduct a sound transmission loss test. Results obtained are tested values and were secured by using the designated test method(s). The complete test data is included herein. The client provided the test specimen. All measurements were conducted in the HT test chambers at Intertek B&C located in York, Pennsylvania.

This report does not constitute certification of this product nor an opinion or endorsement by this laboratory.

For INTERTEK B&C:

COMPLETED BY:	Jear N. Mutunda
TITLE:	Technician II - Acoustical Testing
SIGNATURE:	
DATE:	05/11/18

REVIEWED BY:	Kurt A. Golden
TITLE:	Project Lead - Acoustical Testing
SIGNATURE:	
DATE:	05/11/18

JNM:jmcs

This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to permit copying or distribution of this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample(s) tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.



TEST REPORT FOR STERGIS WINDOWS AND DOORS, INC.

Report No.: I2143.01-113-11-R0

Date: 05/11/18

SECTION 2**SUMMARY OF TEST RESULTS**

SERIES/MODEL	Windgate
TYPE	Double hung window

OPTION A

GLAZING (Nominal Dimensions)	3/4" IG (3/16" annealed exterior, 5/16" argon, 1/4" annealed interior)
DATA FILE NO.	I2143.01A
STC	33
OITC	28

OPTION B

GLAZING (Nominal Dimensions)	3/4" IG (1/8" annealed exterior, 5/16" argon, 5/16" laminated interior), Glass temperature 75°F
DATA FILE NO.	I2143.01B
STC	35
OITC	29

OPTION C1

GLAZING (Nominal Dimensions)	3/4" IG (1/4" laminated, 1/4" argon, 1/4" laminated), Glass temperature 75°F
DATA FILE NO.	I2143.01C1
STC	36
OITC	30

TEST REPORT FOR STERGIS WINDOWS AND DOORS, INC.

Report No.: I2143.01-113-11-R0

Date: 05/11/18

SECTION 3

TEST METHODS

The specimens were evaluated in accordance with the following

ASTM E90-09 (2016), *Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements*

ASTM E413-16, *Classification for Rating Sound Insulation*

ASTM E1332-16, *Standard Classification for Rating Outdoor-Indoor Sound Attenuation*

ASTM E2235-04 (2012), *Standard Test Method for Determination of Decay Rates for Use in Sound Insulation Test Methods*

SECTION 4

SPECIMEN INSTALLATION

A sound transmission loss test was initially performed on a filler wall.

The specimen plug was removed from the filler wall assembly. A filler wall-reducing element, consisting of two separate 2x6 wood frames filled with concrete, was used to adjust the test opening size to accommodate the test specimen. A dense neoprene gasket was placed between the two wood and concrete frames. The specimen was placed on an isolation pad in the custom test opening. Duct seal was used to seal the perimeter of the specimen to the test opening on both sides. The interior side of the specimen, when installed, was approximately 1/4" from being flush with the receive room side of the filler wall. A stethoscope was used to check for any abnormal air leaks around the test specimen prior to testing. Operable portions of the test specimen, if any, were cycled at least five times prior to testing.

TEST REPORT FOR STERGIS WINDOWS AND DOORS, INC.

Report No.: I2143.01-113-11-R0

Date: 05/11/18

**SECTION 5
EQUIPMENT**

The equipment listed below meets the requirements of the test methods stated in Section 3 of this report.

INSTRUMENT	MANUFACTURER	MODEL	DESCRIPTION	ASSET #	CAL DATE
Data Acquisition Card	National Instruments	PXI-4462	Data Acquisition Card	65124	06/16 *
Data Acquisition Card	National Instruments	PXI-4462	Data Acquisition Card	65126	05/16 *
Data Acquisition Card	National Instruments	PXI-4462	Data Acquisition Card	65125	05/16 *
Source Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64902	04/18
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	65320	08/17
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	65106	03/18
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	64905	03/18
Source Room Microphone	PCB piezotronics	378C20	Microphone and Preamplifier	64906	03/18
Receive Room Microphone	PBC Piezotronics	378B20	Microphone and Preamplifier	64907	12/17
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64908	12/17
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64909	12/17
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64910	12/17
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64911	01/18
Receive Room Environmental Indicator	Comet	T7510	Receive Room	64915	03/18
Source Room Environmental Indicator	Comet	T7510	Source Room	64914	03/18
Microphone Calibrator	Norsonic	1251	Pistonphone Calibrator	Y002919	04/18

*- Note: The calibration frequency for this equipment is every two years per the manufacturer's recommendation.

TEST CHAMBER

	VOLUME	DESCRIPTION
RECEIVE ROOM	234 m ³	Rotating vane and stationary diffusers Temperature and humidity controlled Isolation pads under the floor
SOURCE ROOM	207 m ³	Stationary diffusers only Temperature and humidity controlled

	MAXIMUM SIZE	DESCRIPTION
TL TEST OPENING	4.27 m wide by 3.05 m high	Vibration break between source and receive rooms

N/A-Not Applicable

TEST REPORT FOR STERGIS WINDOWS AND DOORS, INC.

Report No.: I2143.01-113-11-R0

Date: 05/11/18

SECTION 6

LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Jear Mutunda	Intertek B&C
Kurt Golden	Intertek B&C

SECTION 7

TEST PROCEDURE

The sensitivity of the microphones was checked before measurements were conducted.

The transmission loss values were obtained for a single direction of measurement.

Two background noise sound pressure level and five sound absorption measurements were conducted at each of five microphone positions.

Two sound pressure level measurements were made simultaneously in receive and source rooms at each of five microphone positions.

The air temperature and relative humidity conditions were monitored and recorded during all measurements.

Data for flanking limit tests, repeatability measurements, and reference specimen tests are available upon request.

The specimen was kept for further testing per the client's request.

SECTION 8

ACOUSTICAL TEST CALCULATIONS

Transmission loss (TL) at each 1/3 octave frequency is the average source room sound pressure level minus the average receive room sound pressure level, plus, 10 times the log of the specimen area divided by the sound absorption of the receive room with the sample in place.

STC Rating

To obtain the Sound Transmission Class (STC), read the TL of the contour curve at 500 Hz. The sum of the deficiencies below the contour curve must not exceed 32. The maximum deficiency at any one frequency must not exceed 8.

TEST REPORT FOR STERGIS WINDOWS AND DOORS, INC.

Report No.: I2143.01-113-11-R0

Date: 05/11/18

OITC Rating

The Outdoor-Indoor Transmission Class (OITC) is calculated by subtracting the logarithmic summation of the TL values from the logarithmic summation of the A-weighted transportation noise spectrum stated in ASTM E1332.

SECTION 9

SPECIMEN DESCRIPTION

	FRAME	BOTTOM SASH	TOP SASH
SIZE	47-1/4" by 59"	43" by 28-3/8"	43" by 28-3/8"
THICKNESS	3-1/4"	1-3/8"	1-3/8"
CORNERS	Mitered	Mitered	Mitered
FASTENERS	Welds	Welds	Welds
SEAL METHOD	N/A	N/A	N/A
MATERIAL	Vinyl	Vinyl	Vinyl
REINFORCEMENT	N/A	N/A	N/A
DAYLIGHT OPENING SIZE	N/A	40-7/8" by 25-7/8"	40-7/8" by 25-7/8"

OPTION A

MEASURED OVERALL INSULATION GLASS UNIT THICKNESS	0.724"
SPACER TYPE	Duralite

	EXTERIOR SHEET	GAP	INTERIOR SHEET
MEASURED THICKNESS	0.182"	0.317"	0.225"
MUNTIN PATTERN	N/A	N/A	N/A
MATERIAL	Annealed	Argon*	Annealed
LAMINATE MATERIAL	N/A	N/A	N/A

GLAZING METHOD	Exterior
GLAZING MATERIAL	Silicone
GLAZING BEAD MATERIAL	Vinyl

* - Stated per Client/Manufacturer, N/A-Not Applicable

TEST REPORT FOR STERGIS WINDOWS AND DOORS, INC.

Report No.: I2143.01-113-11-R0

Date: 05/11/18

OPTION B

MEASURED OVERALL INSULATION GLASS UNIT THICKNESS	0.749"
SPACER TYPE	Duralite

	EXTERIOR SHEET	GAP	INTERIOR SHEET
MEASURED THICKNESS	0.117"	0.306"	0.326"
MUNTIN PATTERN	N/A	N/A	N/A
MATERIAL	Annealed	Argon*	Laminated
LAMINATE MATERIAL	N/A	N/A	PVB

GLAZING METHOD	Exterior
GLAZING MATERIAL	Silicone
GLAZING BEAD MATERIAL	Vinyl

OPTION C1

MEASURED OVERALL INSULATION GLASS UNIT THICKNESS	0.755"
SPACER TYPE	Duralite

	EXTERIOR SHEET	GAP	INTERIOR SHEET
MEASURED THICKNESS	0.266"	0.229"	0.260"
MUNTIN PATTERN	N/A	N/A	N/A
MATERIAL	Laminated	Argon*	Laminated
LAMINATE MATERIAL	PVB	N/A	PVB

GLAZING METHOD	Exterior
GLAZING MATERIAL	Silicone
GLAZING BEAD MATERIAL	Vinyl

* - Stated per Client/Manufacturer, N/A-Not Applicable

TEST REPORT FOR STERGIS WINDOWS AND DOORS, INC.

Report No.: I2143.01-113-11-R0

Date: 05/11/18

	TYPE	QUANTITY	LOCATION
WEATHERSTRIP	Polypile with center fin	2 Row	Lock rail and stiles
	Polypile with center fin	1 Row	Keeper and top rail
	3/8" Diameter kerf mounted foam-filled bulb gasket with 1/8" leaf	1 Row	Bottom rail
HARDWARE	Cam lock	2	Lock stile
	Child safety lock	2	Top sash stiles
	Keeper	2	Keeper stile
	Tilt latch and-bar set	4	Sash corners
	Block and tackle balance	2	Jamb
DRAINAGE	1" by 1/8" Weep slot	2	Sill

OPTION	TOTAL WEIGHT (lbs)	AVERAGE WEIGHT (lbs/ft ²)
A	108	5.57
B	105	5.42
C1	125	6.45

A drawing of the test specimen is included in Section 12.

TEST REPORT FOR STERGIS WINDOWS AND DOORS, INC.

Report No.: I2143.01-113-11-R0

Date: 05/11/18

SECTION 10 RESULTS

I2143.01A DATA

SPECIMEN AREA	1.80 m ²	RECEIVE TEMP.	22.7 °C	SOURCE TEMP	22.4 °C
TECHNICIAN	Jear N. Mutu	RECEIVE HUMIDITY	53%	SOURCE HUMIDIT	50%

FREQ (Hz)	BACKGROUND SPL (dB)	ABSORPTION (m ²)	SOURCE SPL (dB)	RECEIVE SPL (dB)	SPECIMEN TL (dB)	95% CONFIDENCE LIMIT	NUMBER OF DEFICIENCIES
80	37.5	4.7	106	82	20	1.83	-
100	35.4	5.2	106	76	26	1.50	-
125	36.5	4.8	106	74	28	1.47	0
160	37.5	4.7	105	77	25	1.21	0
200	35.8	4.8	108	85	18	0.88	5
250	31.7	5.4	108	75	28	0.81	0
315	28.1	5.6	101	71	25	0.41	4
400	26.9	5.9	97	64	28	0.63	4
500	26.1	5.9	98	60	33	0.33	0
630	27.1	5.8	102	60	37	0.41	0
800	27.9	6.1	101	58	37	0.46	0
1000	27.4	6.4	98	55	38	0.26	0
1250	25.8	6.9	98	55	37	0.45	0
1600	23.2	7.2	102	59	36	0.36	1
2000	18.3	7.6	96	55	35	0.31	2
2500	15.7	8.5	95	55	32	0.29	5
3150	14.3	10.2	97	56	34	0.27	3
4000	10.8	12.4	96	52	36	0.32	1
5000	10.3	15.6	95	47	38	0.39	-
STC RATING	33 (Sound Transmission Class)						
DEFICIENCIES	25 (Sum of Deficiencies)						
OITC RATING	28 (Outdoor-Indoor Transmission Class)						

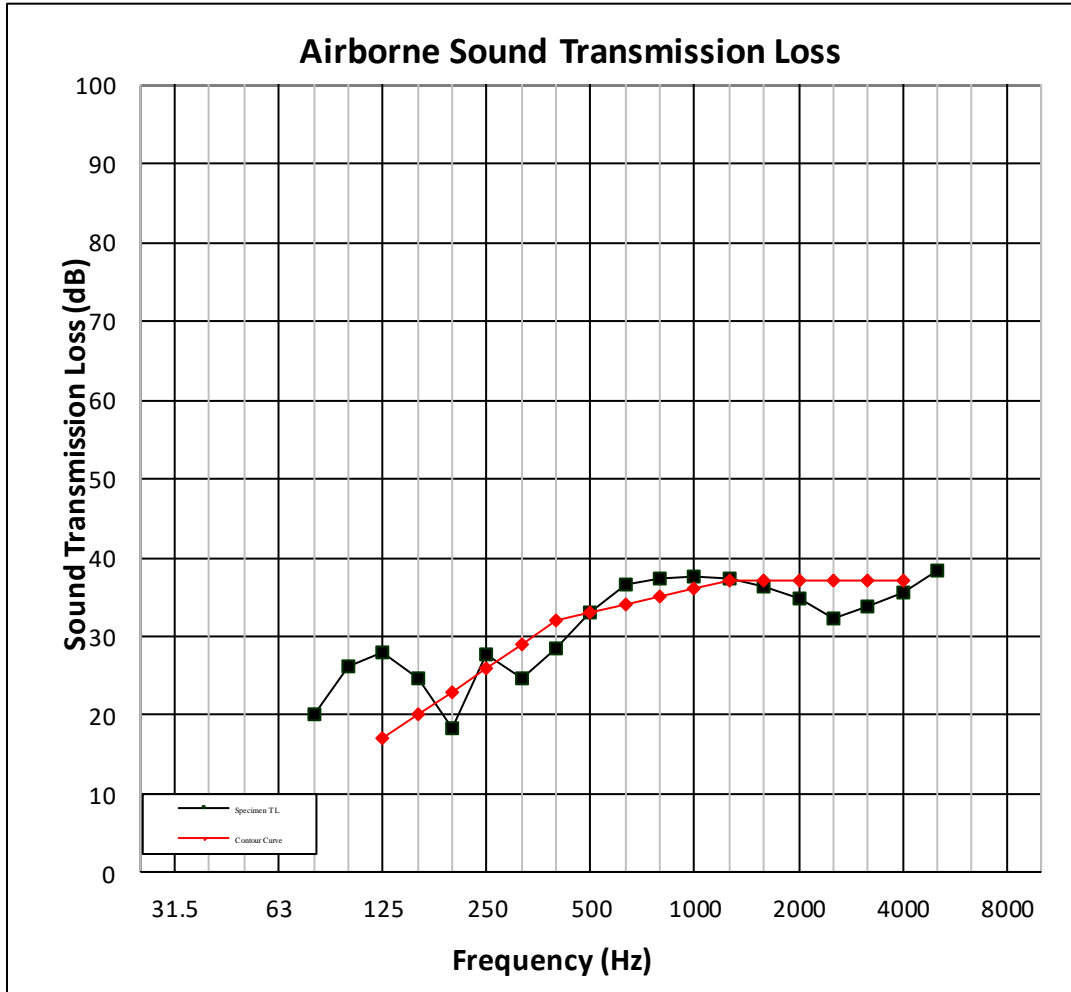
- Notes:**
- 1) Receive Room levels less than 5 dB above the Background levels are red.
 - 2) Specimen TL levels listed in red indicate the lower limit of the transmission loss.
 - 3) Specimen TL levels listed in green indicate that there has been a filler wall correction applied

TEST REPORT FOR STERGIS WINDOWS AND DOORS, INC.

Report No.: I2143.01-113-11-R0

Date: 05/11/18

I2143.01A GRAPH



TEST REPORT FOR STERGIS WINDOWS AND DOORS, INC.

Report No.: I2143.01-113-11-R0

Date: 05/11/18

I2143.01B DATA

SPECIMEN AREA	1.80 m ²	RECEIVE TEMP.	22.3 °C	SOURCE TEMP	21.7 °C
TECHNICIAN	Daniel Poet	RECEIVE HUMIDITY	52%	SOURCE HUMIDITY	51%

FREQ (Hz)	BACKGROUND SPL (dB)	ABSORPTION (m ²)	SOURCE SPL (dB)	RECEIVE SPL (dB)	SPECIMEN TL (dB)	95% CONFIDENCE LIMIT	NUMBER OF DEFICIENCIES
80	36.5	4.3	105	82	20	1.99	-
100	34.5	6.3	106	75	26	1.70	-
125	39.8	4.6	105	76	26	1.38	0
160	40.5	4.3	106	76	26	1.28	0
200	38.2	4.6	108	79	25	1.22	0
250	34.6	5.4	107	80	22	0.84	6
315	29.1	5.5	100	71	24	0.69	7
400	26.0	5.8	98	64	29	0.42	5
500	21.6	5.9	98	59	34	0.73	1
630	18.9	5.8	102	62	35	0.36	1
800	14.9	6.1	101	59	37	0.41	0
1000	10.7	6.2	98	56	37	0.49	1
1250	8.8	6.8	99	55	38	0.31	1
1600	6.2	7.2	102	58	38	0.37	1
2000	4.9	7.5	96	52	38	0.27	1
2500	4.9	8.3	95	48	40	0.30	0
3150	5.4	10.1	97	49	40	0.32	0
4000	7.0	12.2	96	48	39	0.30	0
5000	8.0	15.4	95	44	41	0.33	-
STC RATING	35 (Sound Transmission Class)						
DEFICIENCIES	24 (Sum of Deficiencies)						
OITC RATING	29 (Outdoor-Indoor Transmission Class)						

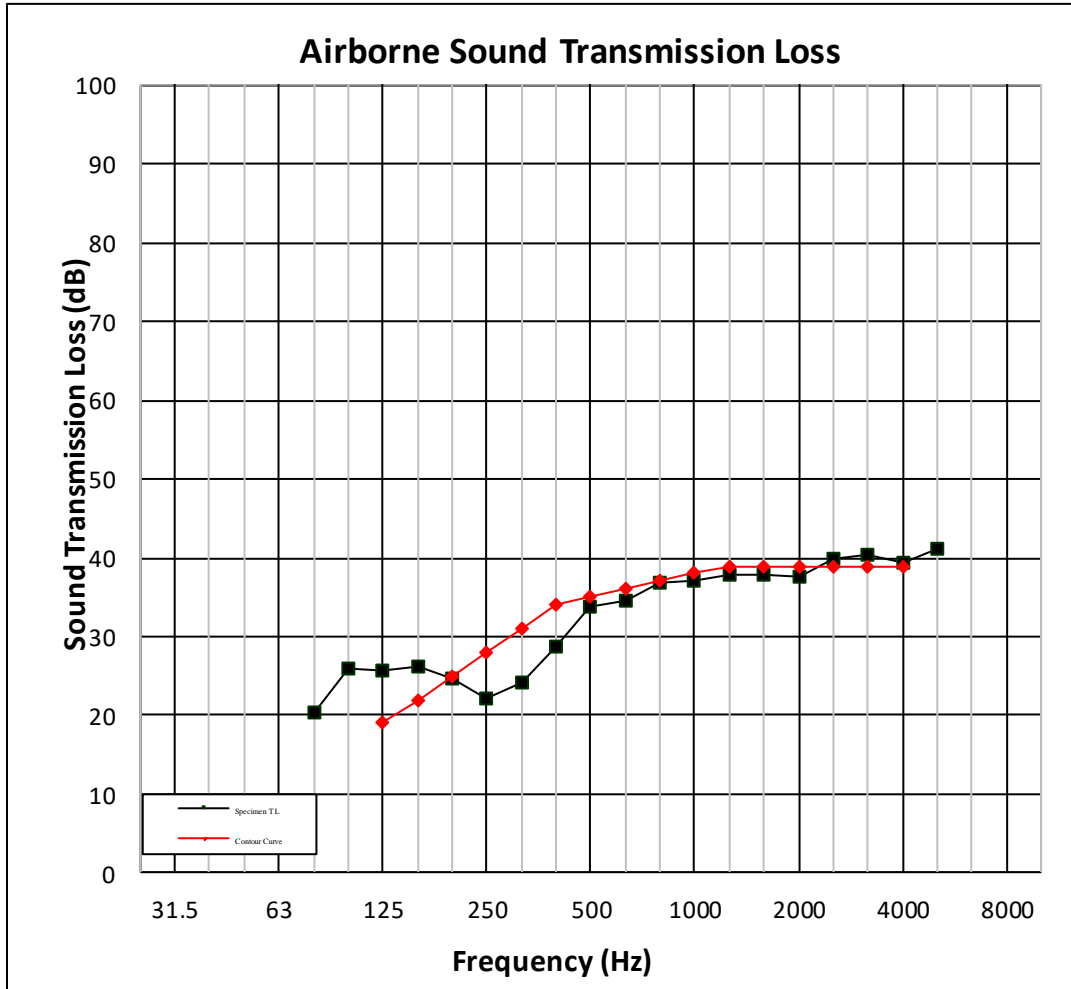
- Notes:**
- 1) Receive Room levels less than 5 dB above the Background levels are red.
 - 2) Specimen TL levels listed in red indicate the lower limit of the transmission loss.
 - 3) Specimen TL levels listed in green indicate that there has been a filler wall correction applied

TEST REPORT FOR STERGIS WINDOWS AND DOORS, INC.

Report No.: I2143.01-113-11-R0

Date: 05/11/18

I2143.01B GRAPH



TEST REPORT FOR STERGIS WINDOWS AND DOORS, INC.

Report No.: I2143.01-113-11-R0

Date: 05/11/18

I2143.01C1 DATA

SPECIMEN AREA	1.80 m ²	RECEIVE TEMP.	21.7 °C	SOURCE TEMP	21.6 °C
TECHNICIAN	Jear N. Mutu	RECEIVE HUMIDITY	52%	SOURCE HUMIDITY	51%

FREQ (Hz)	BACKGROUND SPL (dB)	ABSORPTION (m ²)	SOURCE SPL (dB)	RECEIVE SPL (dB)	SPECIMEN TL (dB)	95% CONFIDENCE LIMIT	NUMBER OF DEFICIENCIES
80	42.5	3.8	106	82	22	1.98	-
100	33.3	4.7	106	75	29	1.49	-
125	35.7	5.0	106	73	29	1.61	0
160	39.7	4.7	105	74	27	0.86	0
200	38.0	4.5	108	84	21	0.78	5
250	30.7	5.5	108	79	25	0.75	4
315	25.0	5.6	101	66	30	0.44	2
400	21.5	6.0	97	63	29	0.43	6
500	18.5	5.9	98	59	34	0.26	2
630	17.9	5.8	102	61	36	0.33	1
800	15.5	6.1	101	58	38	0.42	0
1000	10.8	6.3	98	54	38	0.28	1
1250	9.0	6.9	98	54	38	0.42	2
1600	6.2	7.3	102	58	38	0.30	2
2000	4.8	7.6	96	53	37	0.37	3
2500	4.8	8.5	95	50	38	0.28	2
3150	5.3	10.3	97	50	40	0.13	0
4000	7.0	12.5	96	47	40	0.32	0
5000	7.4	15.7	95	43	43	0.35	-
STC RATING	36 (Sound Transmission Class)						
DEFICIENCIES	30 (Sum of Deficiencies)						
OITC RATING	30 (Outdoor-Indoor Transmission Class)						

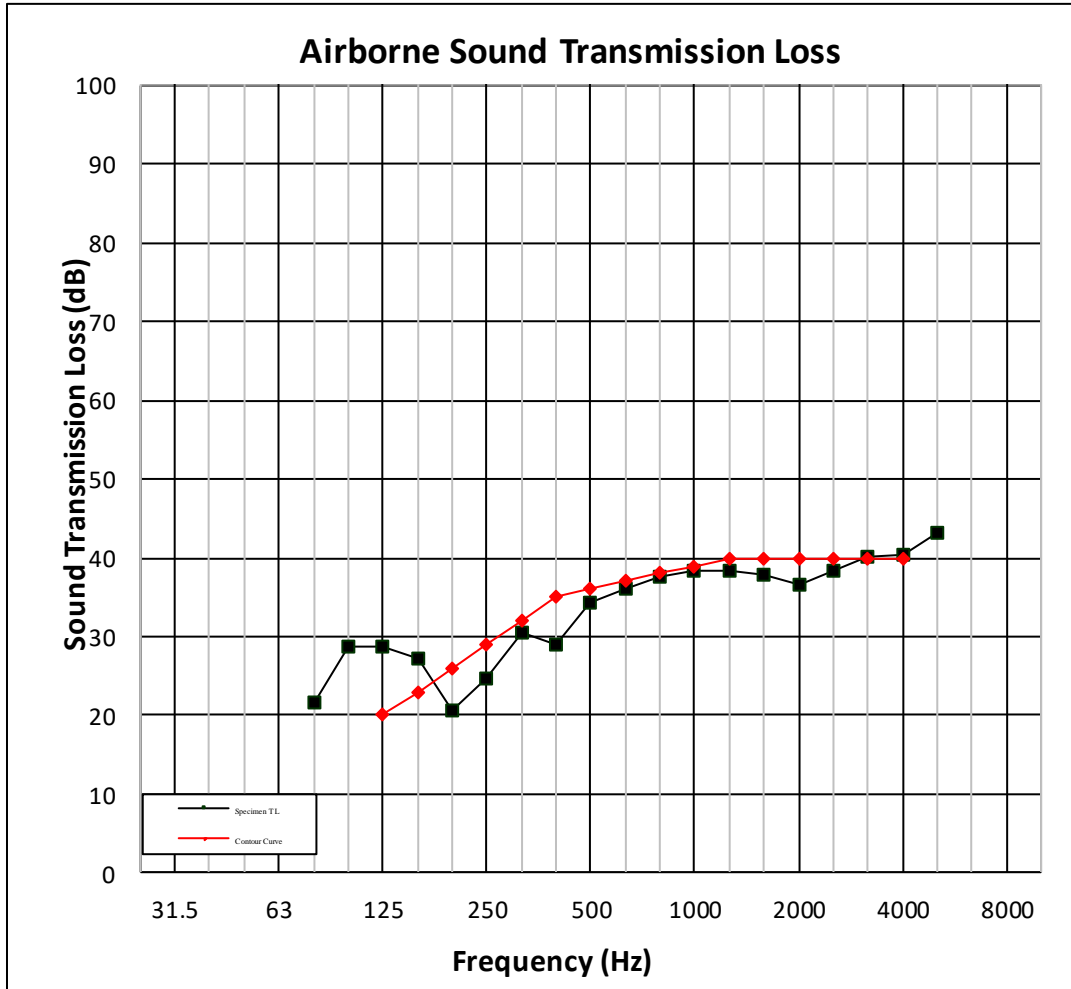
- Notes:**
- 1) Receive Room levels less than 5 dB above the Background levels are red.
 - 2) Specimen TL levels listed in red indicate the lower limit of the transmission loss.
 - 3) Specimen TL levels listed in green indicate that there has been a filler wall correction applied

TEST REPORT FOR STERGIS WINDOWS AND DOORS, INC.

Report No.: I2143.01-113-11-R0

Date: 05/11/18

I2143.01C1 GRAPH



TEST REPORT FOR STERGIS WINDOWS AND DOORS, INC.

Report No.: I2143.01-113-11-R0

Date: 05/11/18

SECTION 11 PHOTOGRAPHS



Photo No. 1
Receive Room View of Installed Specimen



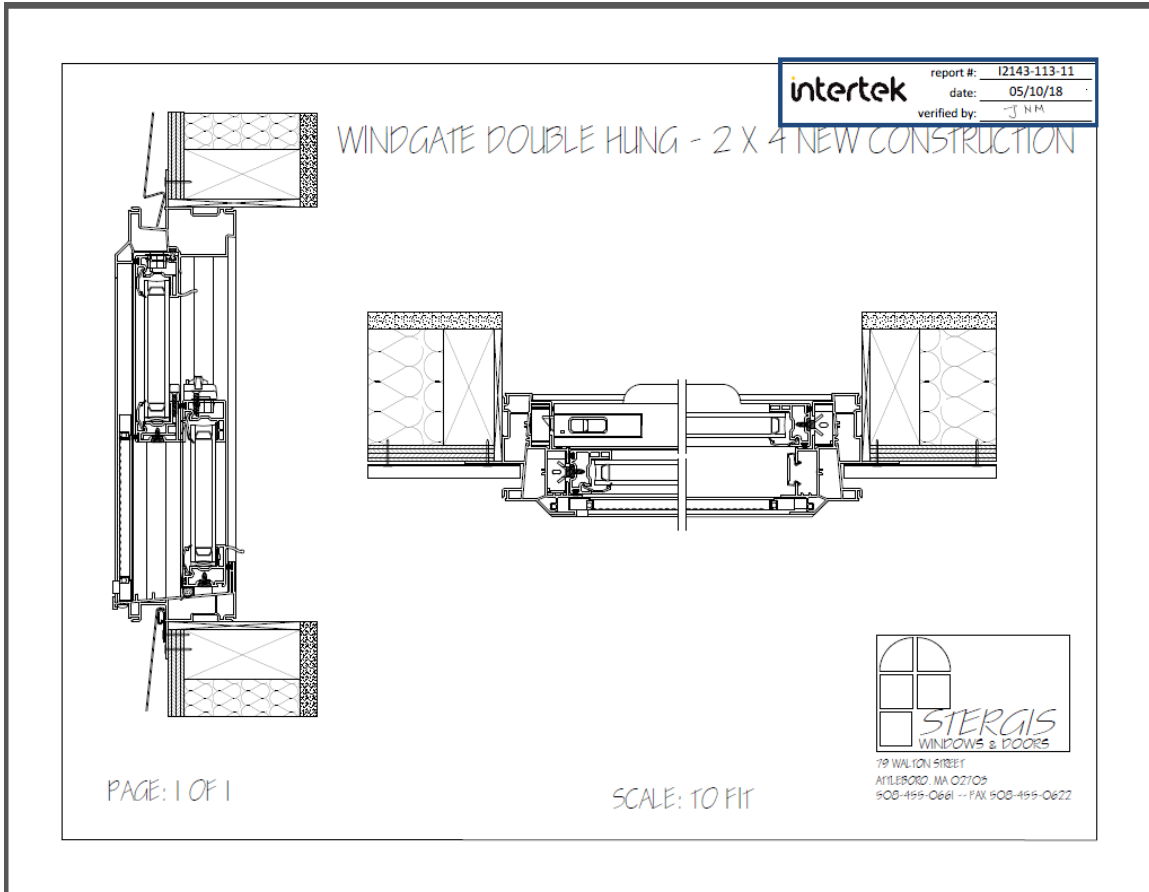
Photo No. 2
Source Room View of Installed Specimen

TEST REPORT FOR STERGIS WINDOWS AND DOORS, INC.

Report No.: I2143.01-113-11-R0

Date: 05/11/18

SECTION 12 DRAWING





Total Quality. Assured.

130 Derry Court
York, Pennsylvania 17406

Telephone: 717-764-7700
Facsimile: 717-764-4129
www.intertek.com/building

TEST REPORT FOR STERGIS WINDOWS AND DOORS, INC.

Report No.: I2143.01-113-11-R0

Date: 05/11/18

SECTION 13

REVISION LOG

REVISION #	DATE	PAGES	REVISION
0	05/11/18	N/A	Original Report Issue